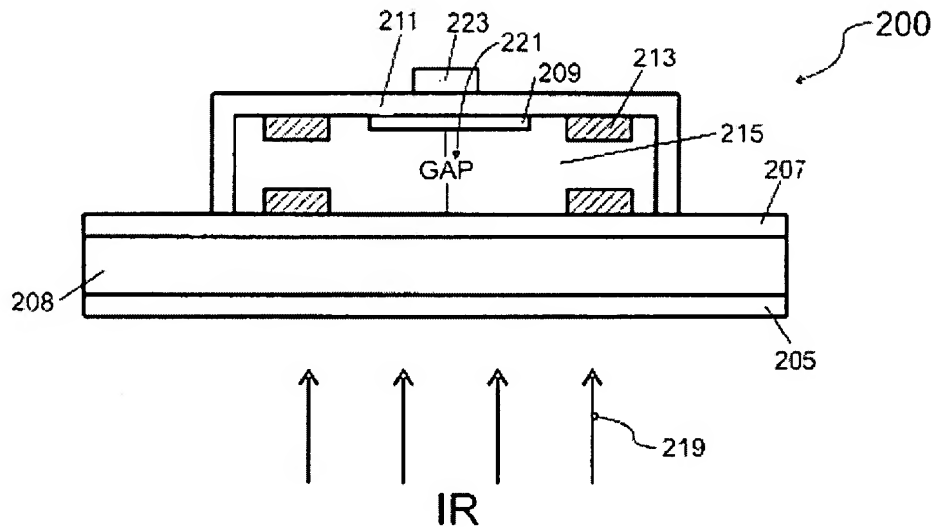


REMARKS/ARGUMENTS

No claims are amended, canceled, or added by this response. Accordingly, following entry of these remarks, claims 1-25 will remain pending for examination.

Embodiments of the present invention relate to an apparatus and method for sensing electromagnetic radiation using a tunable device. As illustrated and described in connection with Figure 2 (reproduced below), certain embodiments disclose an apparatus wherein electromagnetic radiation 219 enters through a substrate 208.



As indicated in at least ¶[0025], ¶[0026], and ¶[0029] of the specification, the substrate through which the electromagnetic radiation enters, is coupled to a tunable cavity that is coupled to a detection device.

Pending independent claims 1 and 17 accordingly recite:

1. An integrated tunable sensing apparatus for electromagnetic radiation, the sensing apparatus comprising:

a substrate comprising a backside and a face, the substrate transparent to incident electromagnetic radiation of a wavelength;

a tunable cavity region coupled to the backside of the substrate and configured to receive the incident electromagnetic radiation transmitted through the substrate . . . and a detection device coupled to the tunable cavity . . .

(Emphasis added)

\* \* \*

17. A method for sensing electromagnetic radiation having a predetermined spatial frequency, the method comprising:  
providing a substrate transparent to a band of electromagnetic radiation;  
wherein the tunable cavity region is coupled to the transparent substrate;  
... receiving the band of electromagnetic radiation transmitted through the  
substrate;  
... capturing information associated with the selected wavelength using a  
detection device coupled to the tunable cavity region. (Emphasis added)

The Examiner has rejected all claims as either anticipated by, or obvious in view of, U.S. Patent Publication No. US2005/0226281 to Faraone et al. ("the Faraone publication"). These claim rejections are traversed as follows.

Regarding the anticipation claim rejections, the Examiner is respectfully reminded:

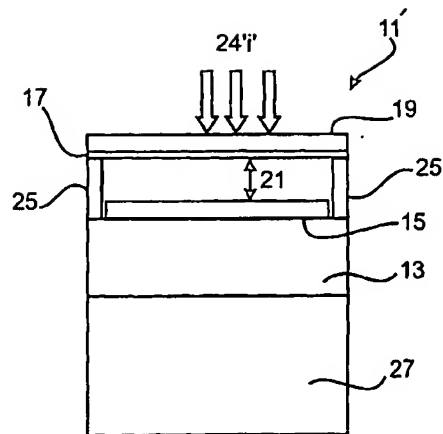
[t]he distinction between rejections based on 35 U.S.C. 102 and those based on 35 U.S.C. 103 should be kept in mind. Under the former, the claim is anticipated by the reference. No question of obviousness is present. In other words, for anticipation under 35 U.S.C. 102, the reference must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present. (Emphasis added; MPEP 706.02)

Regarding the obviousness claim rejections: "in order to establish a prima facie case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations." (MPEP 2143).

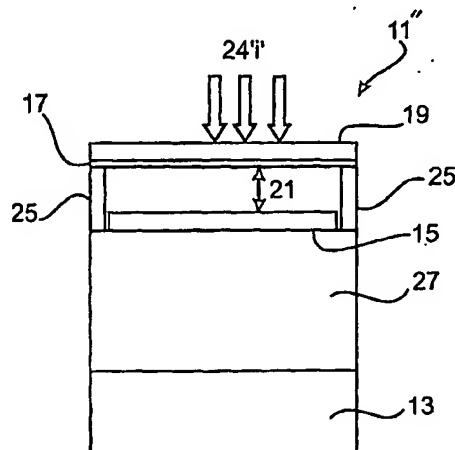
Here, the Faraone publication fails to teach or even suggest an apparatus or method wherein incident radiation enters the apparatus through a substrate layer coupled to a tunable cavity resonator that is coupled to a detector.

Instead, the Faraone publication teaches that incident radiation enters the device through the tunable cavity resonator and the tunable cavity resonator can be coupled either to the substrate layer or the detector, but not both.

For example, Figure 3a (reproduced below) of the Faraone publication shows incident radiation 24'i' entering through a tunable cavity resonator 11' and the tunable cavity resonator and a detector 13 that are located on the same side of a substrate 27 as the incident radiation.



Similarly, Figure 3b (reproduced below) of the Faraone publication also shows incident radiation 24'i' entering through a tunable cavity resonator 11'', and the tunable cavity resonator and a detector 13 are located on the opposite sides of a substrate layer 27 as the incident radiation.



Thus in neither of the above apparatuses shown and described by the Faraone publication, does incident radiation enter a tunable cavity resonator through a substrate (i.e., incident IR radiation 24'i' is always directed to the membrane side of the FP cavity). ¶[0134]. There is thus no teaching, explicit or even implied in the Faraone publication, regarding a claimed substrate transparent to incident radiation.

Moreover, even if the apparatus of the Faraone publication were positioned with the substrate layer facing the radiation source, incident radiation would reach the detector first, by-

passing the tunable cavity resonator entirely. In fact, Faraone teaches that the detector is coupled to the substrate:

“[T]he IR sensitive material 13 constitutes the detector portion of the resonator and is actually grown on a substrate layer 27.” ¶[0137].

Such a teaching is inconsistent with coupling a tunable cavity resonator to both the detector and the substrate layer in the manner claimed. Specifically, the claimed tunable cavity region is coupled to the detection device on one side and the transparent substrate on the other, and hence, the recited detection device is not coupled to the transparent substrate.

In light of the failure of the Faraone publication relied upon by the Examiner even to suggest incident radiation entering through a substrate having the claimed transparent character, it is respectfully asserted that the pending claims cannot be considered obvious in view of that reference. Moreover, there is absolutely no suggestion in the Faraone publication of the substrate layer being coupled to the tunable cavity resonator and the tunable cavity resonator being coupled to the detector.

Based upon the failure of the art relied upon by the Examiner to teach, or even suggest, all of the elements of the pending claims, it is respectfully asserted that the claims cannot be considered anticipated or obvious. Continued maintenance of the claim rejections is improper, and these claim rejections should be withdrawn.

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400

Respectfully submitted,



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